



Future Ticketing Smashes Online Ticket Processing in Australia with Fusion ioMemory™ Solutions

Leading Australian ticketing service destroys spinning disk latency problems for 19x faster online transaction processing performance.

Solution Focus

- MySQL
- VMware ESX 4
- Retail

Summary of Benefits

- 19x faster transaction processing
- Nearly 5x faster payment processing
- Faster query processing results in no overselling
- 2:1 server consolidation
- Deferred storage upgrade 1 to 2 years
- 70%+ less power
- Proven endurance and reliability

The Challenge

Future Ticketing is an online service that provides 'white labeled' business to consumer (B2C) ticket purchase processing throughout Australia and New Zealand. The biggest ticketed festival in Australia is called "Big Day Out," and is considered almost a "rite-of-passage" event for Australian teenagers. Big Day Out is a multi-city festival that typically has over 50,000 attendees per city.

Future Ticketing (also known as Jahan Interactive) has been doing online ticket sales for Big Day Out since 2005. Year upon year, there was a steady increase in the number of tickets purchased online versus through outlets.

However in 2009, ticket demand was unprecedented compared to previous years due to the maturing of the online ticket market in Australia and stellar line-up of artists for the event.

When sales began at midnight, approximately 50,000 concurrent SSL connections converged on the ticketing system.

Future Ticketing's founder and Managing Director, Nasir David explained the impact this had on their disk-based system, "Our systems took an absolute walloping. It took almost two hours for customers to crawl through our system just to place an order. Bottlenecks with the payment processors that handle real-time payments caused problems for our customers, as they didn't receive

confirmation of their ticket purchase until many hours later."

Tasked with finding a way to solve the latency issues before the next Big Day Out, Nasir and his team needed a solution that met the following requirements:

1. Rapidly process thousands of concurrent transactions
2. Accurately count ticket orders to avoid overselling
3. Accelerate the payment processing interface with bank system so customers get purchase confirmation quickly
4. Scale easily to deliver a long-term, enterprise-level solution to performance issues

The Solution

When Nasir and his team searched for a solution to their performance issues, they found SanDisk®. Nasir commented, "Back in 2009, flash was new, but demonstrated the kind of performance we needed." That need for higher performance levels led Nasir to purchase Fusion ioMemory™ ioDrive® products.

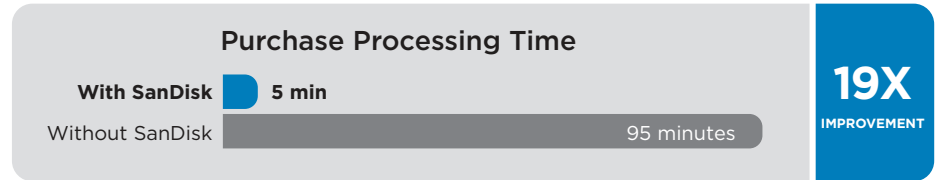
Nasir and his team moved the virtualized ticket counting, transaction, and session handling databases onto the ioDrive products and waited for the 2010 ticket sale day. They found that the SanDisk-based solution exceeded all expectations.

“Our infrastructure, with ioDrive at the core, handled the load brilliantly. We could have scaled up to ten times that load and still been responsive!”

Nasir David,
Managing Director, Future Ticketing

Blazing Customer Service with Faster Transaction Processing

In 2010, ticket sales opened at midnight for the upcoming Big Day Out Sydney 2011, with the largest online allocation of tickets in the event's history. Tickets sold out in less than five minutes, representing a massive 19 fold improvement over the previous year, where completing all the ticket sales took over 95 minutes.



Nasir commented, “During Big Day Out sales in 2010, we absolutely smashed it! It was the best sell-out on the market. In Sydney and Gold Coast event sales, we sold out in less than five minutes and we had smooth sell outs across other cities. Our infrastructure, with ioDrive at the core, handled the load brilliantly. We could have scaled up to ten times that load and still been responsive!”

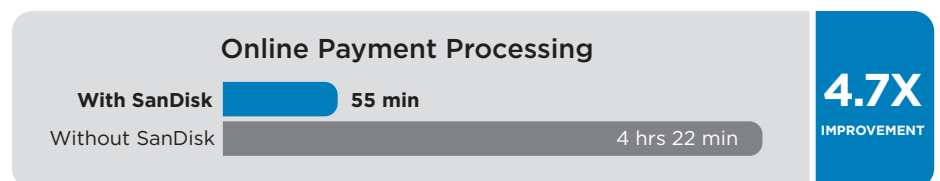
“Wow all tickets gone now...Must say two thumbs up to the BDO website.”

kroix007,
courtesy of Whirlpool
<http://www.whirlpool.net.au>

Payment Processing Game Changer

Large scale, real-time online payment processing was an emerging service for payment processors in Australia in 2010. Payments had to be processed offline for all transactions due to the long response times from the banks and gateways. Due to the slow responsiveness of the ticketing system, orders couldn't be processed and synchronized with the payment gateway at high speed. This resulted in customers having to wait for some time for payments to complete—and had to suffer the anxiety of not knowing whether they had tickets until then.

Nasir explains how the SanDisk powered system transformed Future Ticketing's payment processing, “In 2009, processing all payments took four hours and 22 minutes. The new systems' responsiveness allowed us to optimize our throughput to the payment gateway, resulting in a massive improvement to our processing times. In 2010, with 20% more tickets and 15% higher load, we processed all payments in 55 minutes. Other online ticket sellers couldn't handle large scale sell-out like ours. But customers easily went onto our site and quickly received confirmation of their tickets.”



Keeping the Pace: Tracking the Number of Tickets Sold

Before implementing the SanDisk powered infrastructure, the system slowed under thousands of concurrent transactions, and so did the ticket counting process. These lags resulted in tickets being oversold.

The SanDisk powered system resolve this problem as well: “The best part of the 2010 sale was the ticket counting. Because the database functioned so quickly, we could count up our tickets almost instantly, which means the system knew when we had sold out and our systems could stop sales ‘on a dime,’” explained Nasir.

Improving Data Center Efficiency to Lower Costs

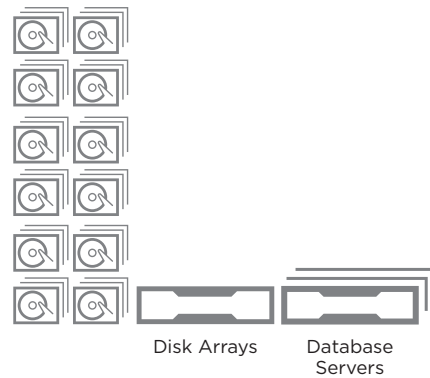
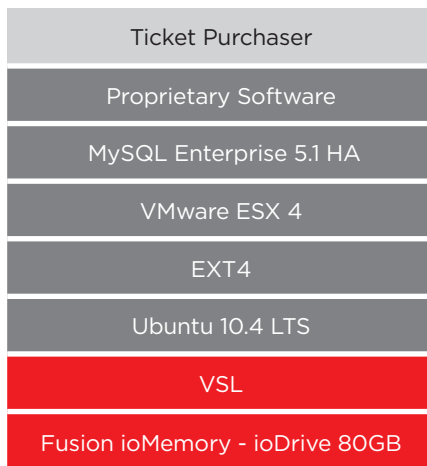
Not only did the Fusion ioMemory products improve application performance and service to Future Ticketing's customers, it also lowered hardware and power costs. Nasir explains, "To get equivalent performance, we could have gone to Fibre Channel or InfiniBand system, but that cost (including training and expertise) was very expensive when compared to SanDisk. The Fusion ioMemory-based system required less than half the servers and stretched our storage upgrade cycle by one to two years. It also cut the power requirements for the system by over 70%, from 2200 watts to just 600 watts."

Flash Forward: Enterprise Grade Endurance and Reliability

When Future Ticketing implemented its SanDisk powered solution in 2010, flash was new in the server. Three and a half years later, the system has continued to run smoothly and has become standard in I/O intensive architectures. Nasir comments, "Not only have we purchased more products from SanDisk for our other systems, the original six ioDrive products we purchased are still deployed at 100% reserves in our production environment."

System Overview

SanDisk Powered Software Stack

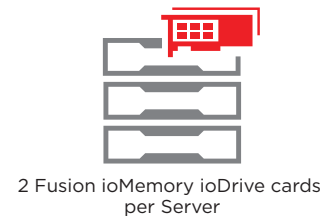


Database Servers

- 6 x 2U servers, dual processors @ 2.4GHz, 16GB RAM
- Ubuntu 10.4 LTS
- Database: MySQL Enterprise 5.1
- Hard disks: 15K RPM SAS drives, 146GB
- Power: 1800W

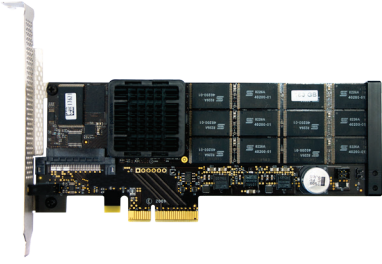
Storage (4RU)

- 2 x 2U disk arrays
- Hard disks: 15K RPM SAS drives in RAID5
- Power: 400W



Servers

- 3 x 2U Dell R710 servers, dual processors @ 2.4GHz, 16GB RAM
- 6 x Fusion ioMemory ioDrive cards
- Power: 600Ws



Fusion ioMemory™ - ioDrive®

“The ioDrive products we bought in 2010 are still running and we’ve bought many more since.”

Nasir David,
Managing Director, Future Ticketing

Summary

Future Ticketing realized the following benefits after implementing SanDisk’s Fusion ioMemory products:

- **19x faster** transaction processing
- **Nearly 5x faster** payment processing
- **Faster query processing** results in no overselling
- **2:1 server consolidation**
- **Deferred storage upgrade** 1 to 2 years
- **70%+ less power**
- **Proven endurance and reliability**

Nasir and his team are more than happy with the SanDisk powered solution: “We needed an enterprise-grade solution and we knew we wouldn’t get the same kind of performance from our hardware no matter how we configured it. SanDisk products continue to perform brilliantly and are now the benchmark for all our I/O-intensive applications. Even now, our competitors must be using inferior ticket systems, as their systems are falling over at loads not even close to what we managed in 2010 with SanDisk.”

About Future Ticketing

Backed by real-world experience and knowledge gathered over 10 years processing \$150M in ticket sales in the Australian marketplace, Future Ticketing understands the individual needs of its clients and provides a transparent conduit to the end user. The systems have been developed from the ground up and have been proven time and time again to withstand the heavy loads generated by some of the most popular events in the country. With a 100% uptime track record, Future Ticketing can be relied upon to deliver superior service in event ticketing sales. The main office is in Perth, Western Australia. Future Ticketing is a privately owned company.

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At SanDisk, we’re expanding the possibilities of data storage. For more than 25 years, SanDisk’s ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe.

The performance results discussed herein are based on Future Ticketing internal testing and use of Fusion ioMemory products. Results and performance may vary according to configurations and systems, including drive capacity, system architecture and applications.

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